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Primer on Health Surveys

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The aim of this paper is to introduce novice researchers to surveys as a method of data collection. It starts with the definition of a survey, its major purposes and types as well as changes in the goals surveys have helped to achieve over time. Advantages and disadvantages of surveys over population censuses and medical examinations are discussed. Approaches to questionnaire construction are introduced along with properties that questionnaires are evaluated for. Modes of administration, sample size issues, and data analysis approaches are also introduced. The primer is illustrated with examples of surveys conducted in different countries with various public health purposes.

KEY WORDS: population survey, data collection, sample size, cross-sectional, longitudinal, descriptive, analytic, KAP surveys, census, reliability, validity, ethics, survey questions, modes of administration.

Азбука опросов населения о здоровье

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Статья представляет собой краткий учебник для начинающих исследователей, касающийся опросов населения как метода сбора данных. Она начинается с определения опросов, обозначения их важнейших задач и типов, а также обозначения того, как задачи опросов менялись со временем. Обсуждаются преимущества и недостатки опросов по сравнению с переписями населения и его медицинским обследованием. Также сообщается базовая информация о подходах к построению опросников и их характеристиках, по которым оценивается их качество. Обсуждаются способы проведения опросов, подходы к определению размеров выборки, а также анализу собранных данных. Статья иллюстрирована примерами опросов, которые проводились в разных странах и решали различные задачи здравоохранения.

КЛЮЧЕВЫЕ СЛОВА: опросы населения, сбор данных, размер выборки, одномоментный, лонгитюдный, описательный, аналитический, опросы знание-отношение-поведение, перепись населения, валидность, надежность, этика, вопросы, способы проведения опроса.

Абетка опитувань населення про здоров'я

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Стаття стосується опитувань населення як методу збору даних і має на меті познайомити з темою дослідників-початківців. У ній наведено визначення поняття опитувань, зазначені найважливіші їхні типи та завдання, а також те, як ці завдання змінювалися у часі. Автор обговорює переваги та недоліки опитувань у порівнянні з переписом населення та його медичними обстеженнями. Обговорено підходи до побудови опитувальників, а також їхні властивості, за якими оцінюють їхню якість. Наведено способи застосування опитувань, а також підходи до визначення розміру вибірки та аналізу зібраних даних. Статтю проілюстровано прикладами опитувань населення, проведених у різних країнах з метою вирішення різних завдань охорони здоров'я.

КЛЮЧОВІ СЛОВА: опитування населення, збір даних, розмір вибірки, крос-секційний, лонгитюдний, описовий, аналітичний, опитування щодо знань-ставлення-поведінки, перепис населення, валидність, надійність, шляхи застосування.

A survey is “an investigation in which information is systematically collected but in which the experimental method is not used” (Last 1988, page 125) and “a method of collecting information from a sample of the population of interest” (Bowling 2009, page 214). Following is a brief introduction to this widely used method. Public health

surveillance, a somewhat related method that is defined as “the systematic and continuous gathering of information about the occurrence of diseases and other health phenomena” (Friis 2010, page 50), is not addressed here.

USES OF SURVEYS

Surveys can be implemented once (“cross-sectional”) or repeatedly (“longitudinal”). A survey can serve a descriptive or analytic purpose. The aim may be to identify either non-causal or causal relations among factors. In the 1950s, for example, many low-income na-

tions conducted surveys of people's knowledge, attitudes, and practices (KAP) regarding family planning (Mauldin 1965). Leaders sought this information for many reasons, including for the monitoring and improvement of family planning programs and the forecast of new school entrants. The KAP surveys later evolved into the Demographic and Health Surveys (DHS) that have been conducted in many countries, including Botswana (Botswana 1990) and Ukraine (Ukrainian Center for Social Reforms et al, 2008). For example, based on completed interviews with 4368 women aged 15-49, the Botswana survey identified the reasons for nonuse of contraception as infrequent sex, opposition to family planning, and partner disapproval. The DHS topics are not limited to fertility and contraception but also include alcohol, tobacco, and other drugs, HIV/AIDS, and other subjects.

In contrast to a census, a survey is conducted when time and money are limited and information from a sample is acceptable. Surveys are used in many fields, including medical care, public health, and others. Although the information collected by surveys often comes from respondent self-reports or surrogate reports, it can also include information from respondent examinations. For example, the United States National Health and Nutrition Examination Survey (NHANES) is a program of studies which combines interviews and physical examinations designed to assess the health and nutritional status of adults and children. However, disease prevalence can also be measured with acceptable reliability and validity by questionnaire instead of by medical record review (Katz 1996). Several countries from four continents have completed a recent World Health Organization-coordinated national

mental health survey to estimate the national rates of depression, alcohol and drug disorders, and other conditions (WHO 2004). In another example, work with 10 resource-limited, African countries led to development of a well accepted, highly reliable, and low cost questionnaire that, with the knowledge that blood in stool and in diarrhea are signs of schistosomiasis infection, surveys school children in order to identify high-risk communities that should receive priority allocation of chemotherapy (Lengeler 2002).

ETHICS OF SURVEYS

Persons who desire to conduct a survey should first determine the main reason for wanting to acquire certain information. Surveys require time, effort, and expense for both the conductors and the participants, and they must often be justified in advance to responsible research ethics review bodies. Although the nature and quality of the review varies between and within countries, a principle with universal application is respectful treatment of survey participants. Potential participants should be informed of the survey's purpose and risks, if any, before they are asked to give their consent. After starting the survey, participants generally have the legal and ethical right to refuse to answer any specific question. Information that is obtained from survey participants should be used in ways that protect the privacy of the participants.

METHODS OF SURVEYS

Before launching a survey, the planners should name and define the precise concepts or subjects of interest, perhaps after consulting a focus group. Generalizable lessons from past survey experience should be considered during the design and operation of a new survey (Schaeffer and Presser 2003). In

general, one should consider if the new survey can use a previously developed and implemented questionnaire. An existing instrument, especially one whose psychometric properties are documented to be acceptable, can allow researchers to skip the time-consuming and complicated step of creating, testing, and evaluating a new instrument.

Surveys will ask questions, so the questions that are asked must be ones that the target respondents can and will answer reasonably accurately. Sensitive and controversial topics can be explored in surveys, but such investigations can meet resistance that results in lower response rates, less accurate information, or both. It is fortunate that experts from several disciplines, including psychology, sociology, statistics, demography, political science, and others, have contributed to the development and improvement of best practices for this method of data collection. Common types of questions in surveys are those that address (a) events or behaviors and (b) evaluations or attitudes. A careful search of bibliographic databases and inquiries to experts in the field will often uncover candidate instruments that can be used, in whole or in part, in new surveys. (Relevant resources are DeVellis 1996 and Streiner and Norman 2003.) In some situations or settings, such as when a genuinely new research question or topic is being investigated, an entirely new instrument must be created.

The two main properties that a survey questionnaire should have are high validity and reliability. If a surveyor finds an existing questionnaire that may work for a new survey, he may also find some documentation on the tool's validity and reliability. Reliability refers to the instrument's reproducibility and consistency, while validity is an assessment of whether it measures

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what it aims to measure (Bowling 2009, p 162). Using the kappa statistic to measure inter-rater reliability of items on two occasions 14 days apart in a national youth risk behavior survey questionnaire, Brener et al. (1995) found that students appeared to report personal health risk behaviors reliably over time. Note however that reliability does not insure validity.

MODES OF SURVEYS

Survey questions can be administered to participants in a variety of ways. For example, participants can complete the questionnaire by mail, computer, telephone, or face-to-face interview. Each mode has advantages and disadvantages that should be considered before the most appropriate mode for the particular survey is chosen. Some factors to consider in selecting the most suitable mode are: the mode in which the questionnaire was designed for and previously used in; the likely preference of the target respondents; the likely effect on the overall and item response rates; the financial cost of each mode; the availability of data collectors experienced with the mode; and the length and complexity of the survey instrument. To reach a sample of men who have sex with men for a study of the relation among body weight, body image, and HIV/AIDS sexual risk behaviors, Kraft et al (2006) conducted a web-based survey in a midwestern United States metropolitan area community. (Rhodes et al. 2003 provide guidance to researchers on the collection of data through the world wide web.) My investigation into risk factors for carpal tunnel syndrome employed trained telephone interviewers who asked study participants a series of questions, including some that were skipped based on certain answers (Nordstrom 1997).

SIZES AND SAMPLES OF SURVEYS

Because a survey is based on a sample from a population, it is not a census. Public opinion polls by the Gallup and other polling organizations are surveys, and they often include only 1000-2000 respondents. Surveys in general have no minimum or maximum size, and the selection of desired size is somewhat arbitrary. A survey of fewer than 10 individuals would usually be hard to justify. A survey of 1000 individuals will not be conducted if the survey budget is inadequate. As noted by one guide, "If the aim is to estimate prevalence, then sample size will depend on the required accuracy of that estimate" (Coggon D et al 1997). Suppose one wants to estimate the percentage of college students who binge drink alcoholic beverages in the past 30 days. In a country with many universities and colleges, the cost of surveying all college students would be prohibitive, but a random or representative sample could be surveyed to get an acceptable estimate that could perhaps be generalized to the whole population of college students. Even in a country with a previously determined college student binge drinking prevalence, a new investigation on this topic can be justified if it asks some important, new questions. Although several survey organizations or investigators may be interested in the same health behavior, they are not always interested in the same correlates or risk factors.

SURVEY DATA ANALYSIS

Results from surveys usually require manual or computer editing for completeness, accuracy, and other criteria. So-called logic checks can uncover problems in data collection as, for example,

when a male respondent reports having been pregnant. Survey reports should include the number of persons invited to participate, the number who completed the survey, the participation rate, some basic characteristics of the completers such as age and sex, and the major results of the survey. Survey reports should include the author's assessment of sampling and non-sampling error. For example, a survey aimed at measuring the percentage of a country's college students who drink alcoholic beverages should include both the estimated prevalence and the estimated precision of the prevalence. For reasons of data confidentiality and privacy, nothing in the report's text, tables, or graphs should permit a reader to identify any individual participant.

CONCLUSION

A survey is a valuable method that is used to systematically obtain information from a sample of individuals. Before designing and launching a new survey, the planners should determine that the desired information is not already collected and available. Surveyors should treat survey participants respectfully and should publish the survey results with an assessment of sampling and non-sampling error.

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